

WHAT IS CLAIMED IS:

1. A method of making a semiconductor chip assembly comprising the steps of:

5 (a) providing a dielectric element having top and bottom surfaces and terminals on said bottom surface;

(b) supporting semiconductor chip having a front surface with contacts thereon, a rear surface and edges extending between said front and rear surfaces above said top surface of said dielectric element by means of a plurality of posts extending between said rear surface of the chip and the top surface of the dielectric element; then

15 (c) applying a first curable liquid so that said first liquid penetrates between said rear surface and said top surface and penetrates between said posts; then

(d) curing said first liquid to form a flexible rear encapsulant;

20 (e) connecting said contacts to said terminals by connecting flexible leads between said contacts on said front surface and electrically conductive elements on said dielectric element; and

(f) providing a flexible lead encapsulant around said chip and said flexible leads.

25 2. A method as claimed in claim 1 wherein said step of providing a flexible lead encapsulant includes the steps of applying a second liquid of different composition from said first liquid and curing said second liquid.

30 3. A method as claimed in claim 2 wherein said step of applying said second liquid is performed after said step of curing said first liquid.

4. A method of making a semiconductor chip assembly comprising the steps of:

(a) providing a dielectric element having top and bottom surfaces and terminals on said bottom surface;

10 (c) connecting said contacts to said terminals by connecting flexible leads between said contacts on said front surface and electrically conductive elements on said dielectric element; and

(e) curing said liquid to form a flexible rear encapsulant between the rear surface of the chip and the dielectric element and to form a flexible lead encapsulant integral with said rear around said chip and said flexible leads.

30 6. A method as claimed in claim 5 wherein said
gas pressure is maintained during said step of curing said
first liquid.

placing said first liquid on said top surface of said dielectric element at edges of said chip and applying a gas under pressure around the chip and dielectric element to thereby force said first liquid into the spaces between said posts.

8. A method as claimed in claim 7 wherein said gas pressure is maintained during said step of curing said first liquid.

9. A method of enhancing the reliability of electrical connections in a semiconductor package during operation of the chip, comprising the steps of:

(a) providing a semiconductor chip having a front contact bearing surface and a rear surface;

(b) providing flexible leads extending from said contacts on said front surface of said chip, said flexible leads being connected to said contacts at joints on said front surface;

(c) juxtaposing a spreader above said front surface, said spreader having a coefficient of thermal expansion substantially equal to the coefficient of thermal expansion of said chip; and

(d) disposing a liquid encapsulant between said front surface and said spreader and around said leads and curing said encapsulant, whereby the motion of the leads during thermal cycling leads is constrained.

10. The method as claimed in claim 9, further comprising the step of providing a predetermined geometry for the cured encapsulant so as to affect the constraint of the leads.